

AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An image reading-out apparatus for exposing and scanning an original document to read out an image on said original document and thereby obtaining image data, comprising:

a background level detecting circuit configured to detect ~~said~~ a background level of said original document from said image data;

an analog-to-digital converter configured to remove an influence due to a ~~the~~ color of said background level on said original document from said image data and configured to perform ~~the~~ an analog-to-digital conversion of said image data in accordance with said detected background level; and

a black-shading compensation circuit configured to perform a black-shading compensation of said image data after said analog-to-digital conversion,

wherein said black-shading compensation circuit comprises:

plural black level ~~values~~ value calculating circuits configured to respectively obtain, per each ~~one~~ line, black level values employed for said black-shading compensation from said image data by use of respective different calculation members;

a selection circuit configured to select and output one black level value among ~~plural sorts of~~ the black level values outputted by said plural black level ~~values~~ value calculating circuits; and

a subtracter configured to subtract said selected black level value from said image data after performing said analog-to-digital conversion and said black-shading compensation.

Claim 2 (Currently Amended): The image reading-out apparatus as defined in claim 1, further comprising:

a control member configured to perform the selection for said image data by use of said selection circuit in accordance with the ~~sets~~ black level values of the processing performed at a stage subsequent to ~~that of~~ said black-shading compensation circuit.

Claim 3 (Currently Amended): The image reading-out apparatus as defined in claim 2, wherein one of said plural black level ~~values~~ value calculating circuits is a first calculation circuit which is configured to calculate said black level value on ~~the a~~ basis of the image data per ~~one~~ line inputted at a first time ~~this time~~ and the image data per at least one of plural lines ~~line~~ inputted until a second time ~~until last time~~; and

wherein another one of said plural black level ~~values~~ value calculating circuits is a second calculation circuit which is configured to calculate said black level value only on the basis of the image data per ~~one~~ line inputted at a first time ~~this time~~, and wherein said second time precedes said first time.

Claim 4 (Currently Amended): The image reading-out apparatus as defined in claim 3, wherein the ~~sorts of processings~~ processing performed at the stage subsequent to that of said black-shading compensation circuit include first processing and second processing;

wherein the first processing is a processing of amplifying the influence exerted by the noise on said image data to a larger extent than the second processing;

wherein the second processing is a processing ~~of being less apt to be~~ affected by said noise than the first processing;

wherein, in the case of performing said first processing, said control member causes the black level from said first calculation circuit to be outputted from said selection circuit; and

wherein, in the case of performing said second processing, said control member causes the black level from said second calculation circuit to be outputted from said selection circuit.

Claim 5 (Original): The image reading-out apparatus as defined in claim 4, wherein said first processing is an MTF compensation.

Claim 6 (Original): The image reading-out apparatus as defined in claim 4, wherein said second processing is a smoothing processing.

Claim 7 (Original): The image reading-out apparatus as defined in claim 5, wherein said second processing is a smoothing processing.

Claim 8 (Currently Amended): A copying machine comprising:
an image reading-out apparatus for exposing and scanning an original document to read out an image on the original document and thereby obtaining image data; and
an image forming apparatus for forming an image on the basis of the image data obtained by said image reading-out apparatus, said image forming apparatus comprising
~~which comprises:~~

a background level detecting circuit configured to detect ~~said~~ a background level of said original document from said image data;

an analog-to-digital converter configured to remove an influence due to the color of said background level on said original document from said image data and configured to perform ~~the~~ an analog-to-digital conversion of said image data in accordance with said detected background level; and

a black-shading compensation circuit configured to perform a black-shading compensation of said image data after said analog-to-digital conversion, wherein said black-shading compensation circuit comprises:

plural black level ~~values~~ value calculating circuits configured to respectively obtain, per each ~~one~~ line, black level values employed for said black-shading compensation from said image data by use of respective different calculation members;

a selection circuit configured to select and output one black level value among ~~plural sorts of~~ the black level values outputted by said plural black level ~~values~~ value calculating circuits; and

a subtracter configured to subtract said selected black level value from said image data after performing said analog-to-digital conversion and said black-shading compensation.

Claim 9 (Currently Amended): A facsimile device comprising:

an image reading-out apparatus for exposing and scanning an original document to read out an image on the original document and thereby obtaining image data;

a transmitting/receiving apparatus for transmitting the image data obtained by said image reading-out apparatus to a network and receiving the image data from said network; and

an image forming apparatus for forming the image on the basis of the image data received by said transmitting/receiving apparatus,

wherein said image reading-out apparatus comprises:

a background level detecting circuit configured to detect ~~said~~ a background level of said original document from said image data;

an analog-to-digital converter configured to remove an influence due to the color of said background level on said original document from said image data and configured to

perform ~~the~~ an analog-to-digital conversion of said image data in accordance with said detected background level; and

a black-shading compensation circuit configured to perform a black-shading compensation of said image data after said analog-to-digital conversion,

wherein said black-shading compensation circuit comprises:

plural black level ~~values~~ value calculating circuits configured to respectively obtain, per each ~~one~~ line, black level values employed for said black-shading compensation from said image data by use of respective different calculation members;

a selection circuit configured to select and output one black level value among ~~plural sorts of~~ the black level values outputted by said plural black level ~~values~~ value calculating circuits; and

a subtracter configured to subtract said selected black level value from said image data after performing said analog-to-digital conversion and said black-shading compensation.

Claim 10 (Currently Amended): An image reading-out apparatus for exposing and scanning an original document to read out an image on said original document and thereby obtaining image data, comprising:

background level detecting means for detecting ~~said~~ a background level of said original document from said image data;

analog-to-digital conversion means for removing an influence due to the color of said background level on said original document from said image data and performing ~~the~~ an analog-to-digital conversion of said image data in accordance with said detected background level; and

black-shading compensation means for performing a black-shading compensation of said image data after said analog-to-digital conversion,

wherein said black-shading compensation means comprises:

plural black level ~~values~~ value calculating means for respectively obtaining, per each ~~one~~ line, black level values employed for said black-shading compensation from said image data by use of respective different calculation members;

selection means for selecting and outputting one black level value among ~~plural sorts of~~ black level values outputted by said plural black level ~~values~~ value calculating means; and

subtraction means for subtracting said selected black level value from said image data after said analog-to-digital conversion and performing said black-shading compensation.

Claim 11 (Currently Amended): The image reading-out apparatus as defined in claim 10, further comprising:

control means for performing ~~the~~ a selection for said image data by use of said selection means in accordance with the ~~sorts of the~~ processing performed at a stage subsequent to that of said black-shading compensation means.

Claim 12 (Currently Amended): The image reading-out apparatus as defined in claim 11, wherein one of said plural black level ~~values~~ value calculating means is a first calculation means for calculating said black level value on the basis of the image data per ~~one~~ line inputted at a first time ~~this time~~ and the image data per at least one ~~or plural lines~~ line inputted until a second time ~~until last time~~; and

wherein another one of said plural black level ~~values~~ value calculating means is a second calculation means for calculating said black level value only on the basis of the image data per ~~one~~ line inputted at the first time this time, and
wherein the second time precedes the first time.

Claim 13 (Currently Amended): The image reading-out apparatus as defined in claim 12, wherein the ~~sorts of processings~~ processing performed at the stage subsequent to that of said black-shading compensation means include first processing and second processing;

wherein the first processing is a processing of amplifying the influence exerted by the noise on said image data to a larger extent than the second processing;

wherein the second processing is a processing ~~of being less apt to be~~ affected by said noise than the first processing;

wherein, in the case of performing said first processing, said control means causes the black level from said first calculation means to be outputted from said selection means; and

wherein, in the case of performing said second processing, said control means causes the black level from said second calculation means to be outputted from said selection means.

Claim 14 (Original): The image reading-out apparatus as defined in claim 13, wherein said first processing is an MTF compensation.

Claim 15 (Original): The image reading-out apparatus as defined in claim 13, wherein said second processing is a smoothing processing.

Claim 16 (Original): The image reading-out apparatus as defined in claim 14, wherein said second processing is a smoothing processing.

Claim 17 (Currently Amended): A copying machine comprising:

an image reading-out apparatus for exposing and scanning an original document to read out an image on the original document and thereby obtaining image data; and

an image forming apparatus for forming an image on a basis of the image data obtained by said image reading-out apparatus which comprises:

background level detecting means for detecting ~~said~~ a background level of said original document from said image data;

analog-to-digital conversion means for removing an influence due to the color of said background level on said original document from said image data and performing ~~the~~ an analog-to-digital conversion of said image data in accordance with said detected background level; and

black-shading compensation means for performing a black-shading compensation of said image data after said analog-to-digital conversion, wherein said black-shading compensation means comprises:

plural black level ~~values~~ value calculating means for respectively obtaining, per each ~~one~~ line, black level values employed for said black-shading compensation from said image data by use of respective different calculation members;

selection means for selecting and outputting one black level value among the ~~plural sorts of~~ black level values outputted by said plural black level ~~values~~ value calculating means; and

subtraction means for subtracting said selected black level value from said image data after said analog-to-digital conversion and performing said black-shading compensation.

Claim 18 (Currently Amended): A facsimile device comprising:

an image reading-out apparatus for exposing and scanning an original document to read out an image on the original document and thereby obtaining image data:

a transmitting/receiving apparatus for transmitting the image data obtained by said image reading-out apparatus to a network and receiving the image data from said network;
and

an image forming apparatus for forming the image on a basis of the image data received by said transmitting/receiving apparatus, wherein said image reading-out apparatus comprises:

background level detecting means for detecting ~~said~~ a background level of said original document from said image data;

analog-to-digital conversion means for removing an influence due to the color of said background level on said original document from said image data and performing an ~~the~~ analog-to-digital conversion of said image data in accordance with said detected background level; and

black-shading compensation means for performing a black-shading compensation of said image data after said analog-to-digital conversion, wherein said black-shading compensation means comprises:

plural black level ~~values~~ value calculating means for respectively obtaining, per each ~~one~~ line, black level values employed for said black-shading compensation from said image data by use of respective different calculation members;

selection means for selecting and outputting one black level value among ~~plural sorts of~~ black level values outputted by said plural black level ~~values~~ value calculating means; and

subtraction means for subtracting said selected black level value from said image data after said analog-to-digital conversion and performing said black-shading compensation.

Claim 19 (Cancelled).

Claim 20 (Cancelled): A method of reading out ~~an~~ the image on ~~an~~ the original document ~~as defined in claim 19~~ by exposing and scanning said original document and thereby obtaining image data comprising:

detecting a background level of said original document from said image data;
removing an influence due to the color of the background level on said original document from said image data;
performing an analog-to-digital conversion of said image data in accordance with said detected background level; and
performing a black-shading compensation of said image data after said analog-to-digital conversion, wherein said black-shading compensation comprises[[:]]:

respectively obtaining, per each ~~one~~ line, plural black level values employed for said black-shading compensation from said image data by use of respective different calculation members;

selecting and outputting one black level value among plural ~~sorts~~ types of black level values outputted by the plural black level ~~values~~ value calculating members; and

subtracting said selected black level value from said image data after said analog-to-digital conversion and performing said black-shading compensation ~~compensation~~.

Claim 21 (Cancelled).

Claim 22 (Currently Amended): The method of reading out the image on the original document as defined in claim 20, further comprising:

performing ~~the~~ a selection for said image data by use of ~~the~~ a selection circuit in accordance with the ~~sorts~~ plural of black level value of the processing calculation steps performed at ~~the~~ a stage subsequent to ~~that of~~ said black-shading compensation ~~member~~.

Claim 23 (Cancelled).

Claim 24 (Currently Amended): The method of reading out the image on the original document as defined in claim 22,

wherein ~~one~~ a first calculating step of said plural black level ~~values~~ value calculating steps ~~is the~~ performs a first calculation step of calculating said black level value on ~~the~~ a basis of the image data per ~~one~~ line inputted at a first time ~~this time~~ and the image data per at least one line ~~or plural lines~~ inputted until a second time ~~until last time~~; and

wherein ~~another one~~ a second calculating step of said plural black level ~~values~~ value calculating steps ~~is the~~ performs a second calculation step of calculating said black level value only on ~~the~~ a basis of the image data per ~~one~~ line inputted at the first time ~~this time~~, and wherein said second time precedes said first time.

Claim 25 (Cancelled).

Claim 26 (Currently Amended): The method of reading out the image on the original document as defined ~~on~~ in claim 24, wherein ~~the steps of processings~~ processing performed

at the stage subsequent to that of said step of performing a black-shading compensation
further member include includes first processing and second processing;

wherein the first processing is a processing of amplifying the influence exerted by the noise on said image data to a larger extent than the second processing;

wherein the second processing is a processing ~~being less apt to be~~ affected by said noise than the first processing;

wherein, in the case of performing said first processing, said control member causes the black level from said first ~~ealeulation-member~~ calculating step to be outputted from said selection circuit member; and

wherein, in the case of performing said second processing, said control member causes the black level from said second ~~ealeulation-member~~ calculating step to be outputted from said selection circuit member.

Claim 27 (Cancelled).

Claim 28 (Original): The method of reading out the image on the original document as defined in claim 26, wherein said first processing is an MTF compensation.

Claim 29 (Cancelled).

Claim 30 (Original): The method of reading out the image on the original document as defined in claim 26, wherein said second processing is a smoothing processing.

Claim 31 (Cancelled).

Claim 32 (Original): The method of reading out the image on the original document as defined in claim 28, wherein said second processing is a smoothing processing.

Claim 33-34 (Cancelled).